

15

f. the lanes of the first panel are configured to receive, by means of the contact means, means for measuring electrical potential; and

g. the panels are held apart to prevent inadvertent contact between overlapping lanes, compression of the panels at a region of lane overlap causing electrical contact between a lane of the first panel and a lane of the second panel, the measured electrical potential indicating a compression location along the first-panel lane.

18. The textile fabric of claim 17 wherein each of the lanes of the first panel are each separately connected to the voltage source so as to facilitate, upon compression, identification of each first-panel lane with which contact is made through completion of an electrical circuit with the contacted first-panel lane.

19. The textile fabric of claim 17 wherein the electrically conductive fibers are sewn into the matrix.

20. The textile fabric of claim 17 wherein the electrically conductive fibers are attached to the matrix.

21. A textile fabric having electrical functionality comprising:

a. a matrix of woven fibers, said fibers being electrically non-conductive located within said matrix;

b. integrated therewith, at least one of said electrically conductive fibers forming a passive electrical component; and

c. contact means, electrically connected to the at least one conductive fiber, for receiving an electrical connection.

22. The textile fabric of claim 21 wherein the at least one electrically conductive fiber is interwoven with the matrix.

23. The textile fabric of claim 21 wherein the at least one electrically conductive fiber is attached to the matrix.

24. The textile fabric of claim 21 wherein the passive electrical component is a capacitor formed from a plurality of parallel electrically conductive fibers woven through the matrix of non-conductive fibers.

25. The textile fabric of claim 21 wherein the passive electrical component is a capacitor formed from a pair of conductive regions, each region being embroidered onto the matrix and comprising at least one electrically conductive fiber, the regions being spaced apart from each other.

26. The textile fabric of claim 25 wherein the regions are in the form of patches spaced apart from each other on the matrix.

27. The textile fabric of claim 21 wherein the textile comprises:

a. first and second adjacent panels, each panel comprising: i. a matrix of woven fibers, said fibers being electrically non-conductive;

ii. integrated therewith, at least one electrically conductive region;

b. non-conductive means for separating the panels; and

c. contact means, electrically connected to each patch for receiving an electrical connection, and further wherein

d. the regions are aligned with each other, separated by the non-conductive separating means, so as to form a capacitor.

28. The textile fabric of claim 27 wherein the regions are in the form of embroidered patches.

29. The textile fabric of claim 27 wherein the first and second panels are in the form of concentric sleeves, the electrically conductive regions being radially aligned with each other.

30. The textile fabric of claim 21 wherein the passive electrical component is a capacitor formed from:

a. at least two electrically conductive patches having surfaces aligned with each other, one of the patches being attached to the matrix;

16

b. non-conductive means separating the electrically conductive patches; and

c. contact means, electrically connected to each patch for receiving an electrical connection.

31. The textile fabric of claim 21 wherein the passive electrical component is an inductor formed from:

a. at least one electrically conductive spiral region integrated with the matrix; and

b. contact means, electrically connected to each patch for receiving an electrical connection.

32. The textile fabric of claim 31 further comprising means for sensing magnetic coupling between the inductor and another inductor unconnected thereto.

33. The textile fabric of claim 21 wherein the textile comprises:

a. at least two adjacent panels, each panel comprising: i. a matrix of woven fibers, said fibers being electrically non-conductive;

ii. integrated therewith, at least one electrically conductive spiral region;

b. means for electrically connecting the spiral regions of adjacent panels; and

c. contact means, electrically connected to first and second outermost panels, for receiving an electrical connection, the spiral regions collectively forming an inductor.

34. The textile fabric of claim 21 wherein the passive electrical component is a transformer formed from:

a. at least two adjacent panels, each panel comprising: i. a matrix of woven fibers, said fibers being electrically non-conductive;

ii. integrated therewith, at least one electrically conductive and magnetically permeable spiral region;

b. means for electrically connecting the spiral regions of the adjacent panels; and

c. contact means, electrically connected to first and second outermost panels, for receiving an electrical connection,

the spiral regions being magnetically coupled to form a transformer.

35. The textile fabric of claim 34 wherein each spirals is disposed on a face of an associated panel.

36. The textile fabric of claim 34 wherein the panels are in the form of concentric sleeves, the spiral regions of each sleeve winding circumferentially therearound.

37. The textile fabric of claim 34 wherein the spiral regions are radially aligned with each other.

38. A textile having electrical functionality, the textile fabric comprising:

a. a first series of parallel fibers, said fibers being electrically non-conductive;

b. interwoven therewith, a second series of parallel fibers, at least some of said fibers being electrically conductive, the first and second series of parallel fibers being woven perpendicularly to each other to form a matrix;

c. a plurality of electrical components located within said matrix of the textile fabric itself and electrically connected to each other through electrical connection and physical affixation to the electrically conductive fibers, the electrical components forming an electric circuit.